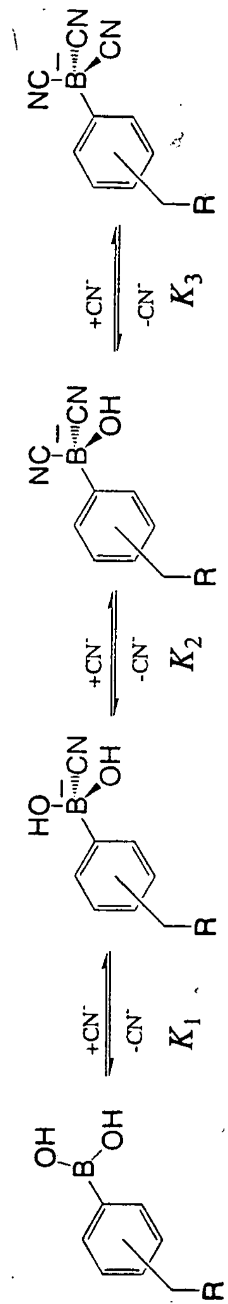
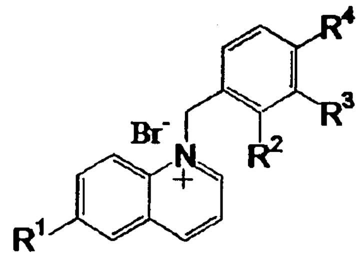


FIGURE 1



Probe	R^1	R^2	R^3	R^4
o-BMOQBA	OCH_3	$B(OH)_2$	H	H
m-BMOQBA	OCH_3	H	$B(OH)_2$	H
p-BMOQBA	OCH_3	H	H	$B(OH)_2$
BMOQ	OCH_3	H	H	H
o-BMQBA	CH_3	$B(OH)_2$	H	H
m-BMQBA	CH_3	H	$B(OH)_2$	H
p-BMQBA	CH_3	H	H	$B(OH)_2$
BMQ	CH_3	H	H	H

FIGURE 2

A

B

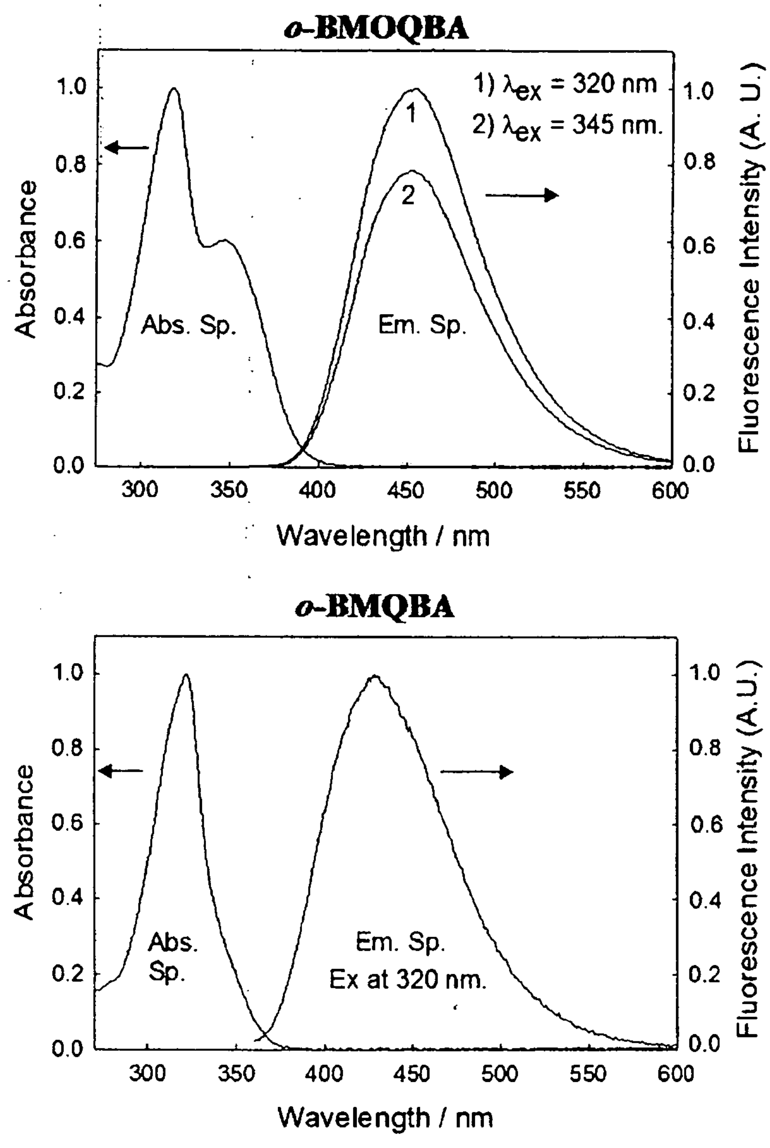

o-BMOQBA
1) λ_{ex} = 320 nm
2) λ_{ex} = 345 nm.
1
2
Abs. Sp.
Em. Sp.
Absorbance
Fluorescence Intensity (A. U.)
Wavelength / nm
o-BMQBA
Abs. Sp.
Em. Sp. Ex at 320 nm.
Absorbance
Fluorescence Intensity (A.U.)
Wavelength / nm

FIGURE 3

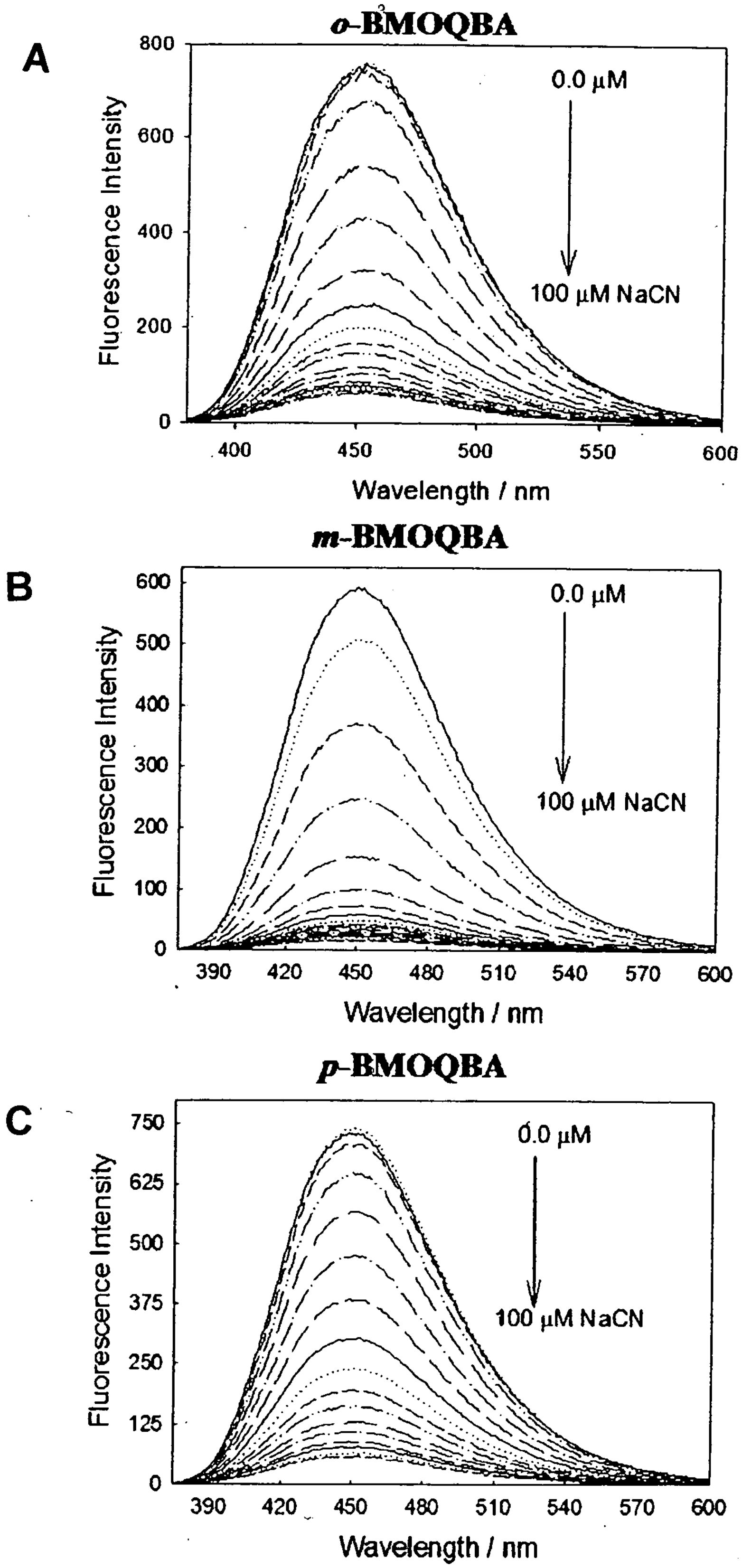
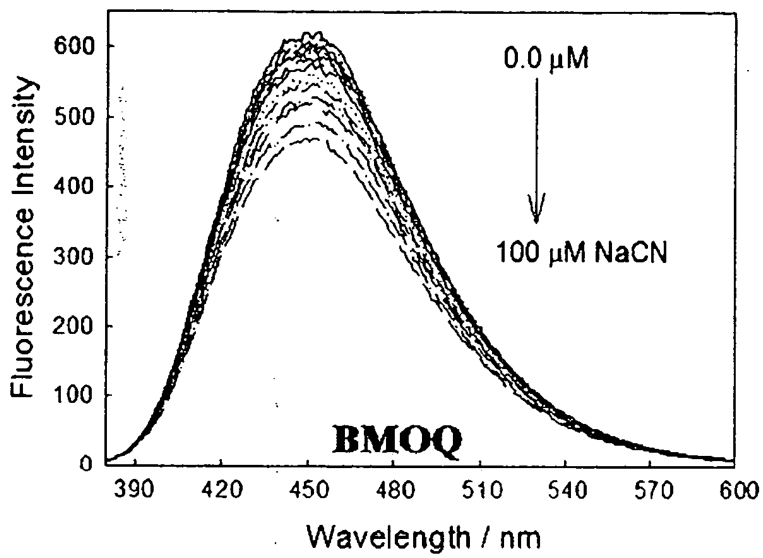

A
o-BMOQBA
0.0 μM
100 μM NaCN
Fluorescence Intensity
0
200
400
600
800
400
450
500
550
600
Wavelength / nm
B
m-BMOQBA
0.0 μM
100 μM NaCN
Fluorescence Intensity
0
100
200
300
400
500
600
390
420
450
480
510
540
570
600
Wavelength / nm
C
p-BMOQBA
0.0 μM
100 μM NaCN
Fluorescence Intensity
0
125
250
375
500
625
750
390
420
450
480
510
540
570
600
Wavelength / nm

FIGURE 4

A


0.0 μM
100 μM NaCN
Fluorescence Intensity
Wavelength / nm
BMOQ
600
500
400
300
200
100
0
390
420
450
480
510
540
570
600

B

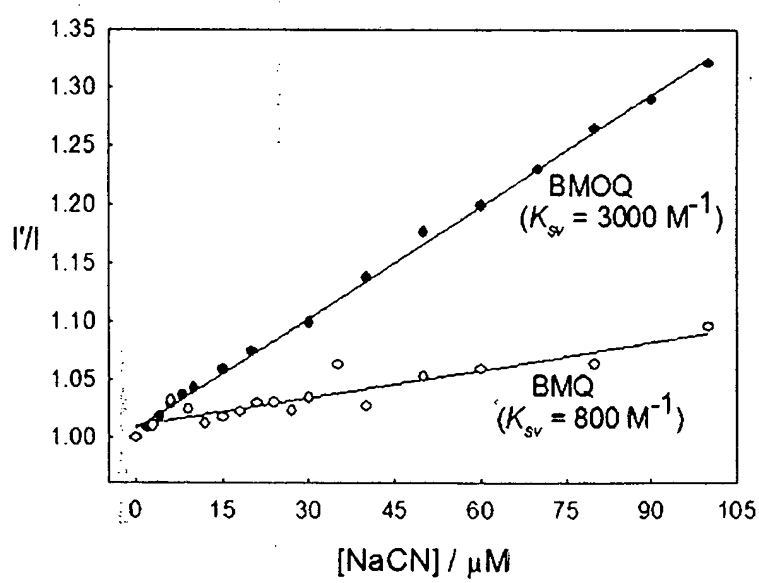
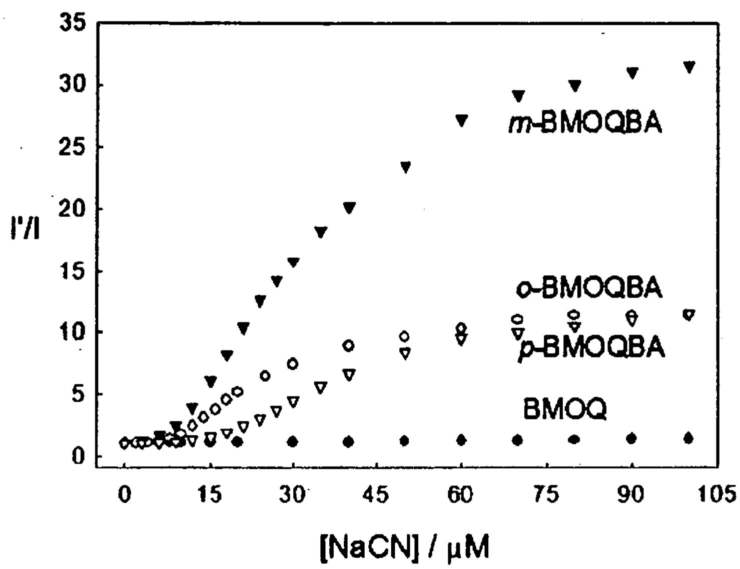

I'/I
[NaCN] / μM
BMOQ
(K_{sv} = 3000 M^{-1})
BMQ
(K_{sv} = 800 M^{-1})
1.35
1.30
1.25
1.20
1.15
1.10
1.05
1.00
0
15
30
45
60
75
90
105

FIGURE 5



35
30
25
20
15
10
5
0
I'/I
m-BMOQBA
o-BMOQBA
p-BMOQBA
BMOQ
0
15
30
45
60
75
90
105
[NaCN] / μM

FIGURE 6

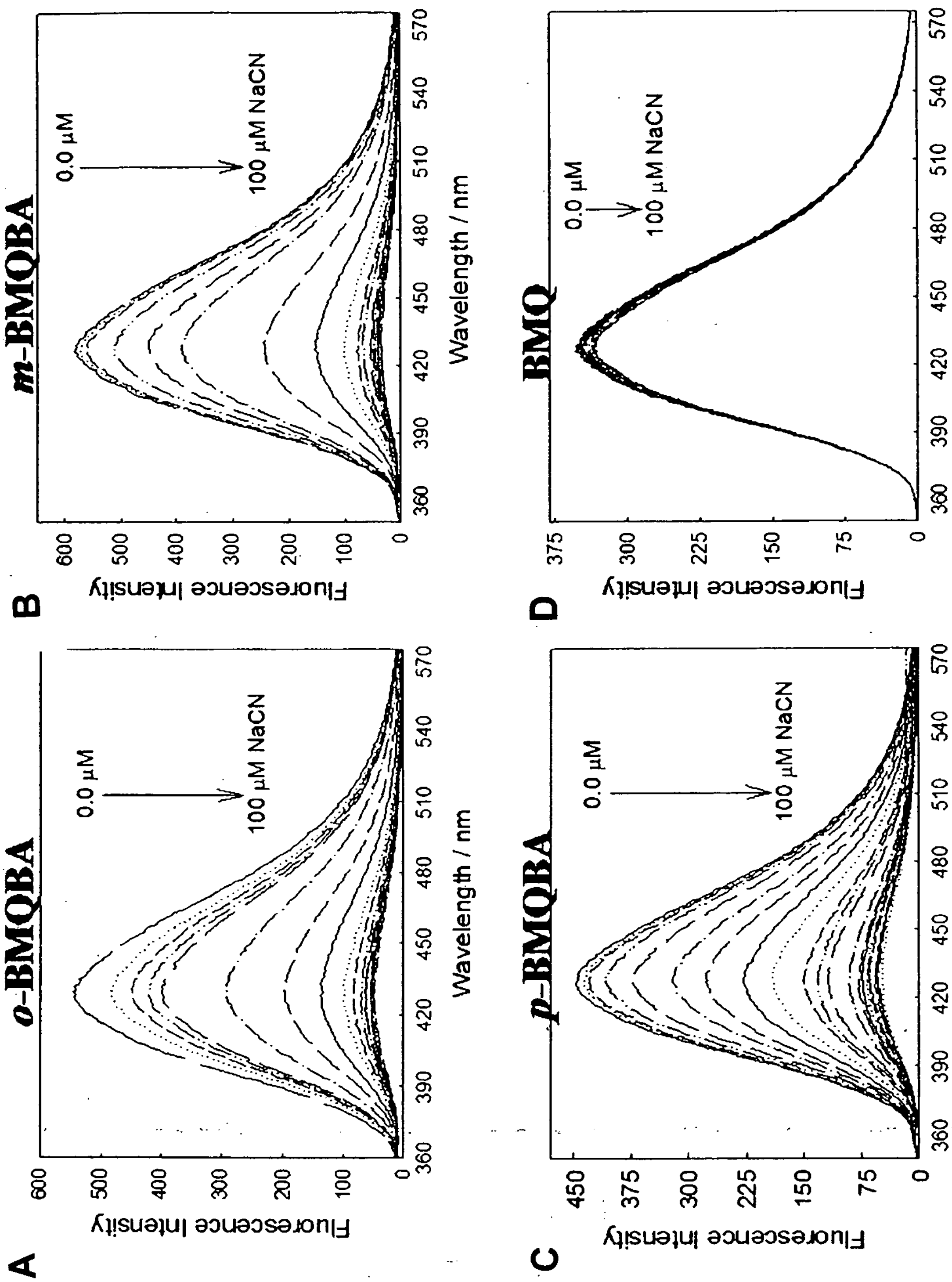

A
o-BMQBA
B
m-BMQBA
C
p-BMQBA
D
BMQ
0.0 μM
100 μM NaCN
Fluorescence Intensity
Wavelength / nm

FIGURE 7

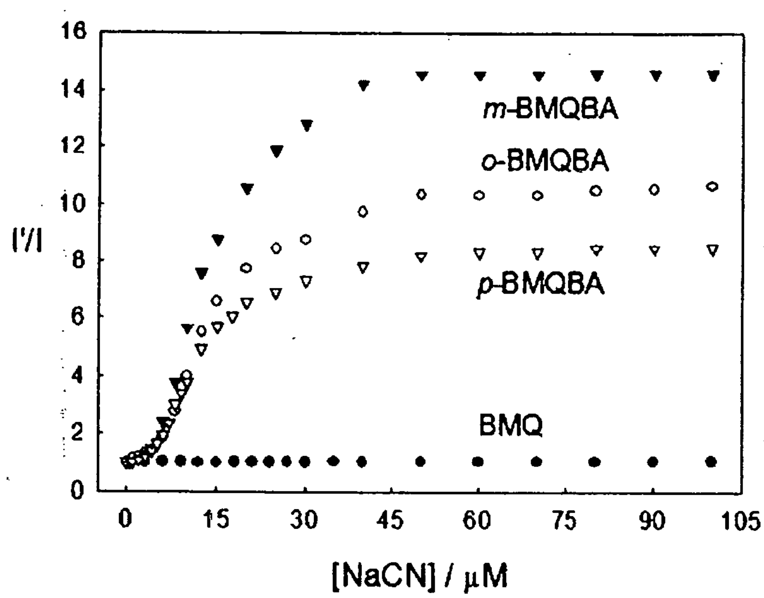

16
14
12
10
8
6
4
2
0
I'/I
m-BMQBA
o-BMQBA
p-BMQBA
BMQ
0
15
30
45
60
75
90
105
[NaCN] / μM

FIGURE 8

Table 1 - Dissociation constants, K_D (μM^3), for the probes with cyanide in water.

Probe	**K_D (μM^3)**
o-BMOQBA	52.9
m-BMOQBA	84.0
p-BMOQBA	20.8
BMOQ	---
o-BMQBA	16.7
m-BMQBA	16.9
p-BMQBA	15.9
BMQ	---

FIGURE 9

Table 2 – Multiexponential Intensity decay of BMOQ and *o*-BMOQBA

[Cyanide] μM	τ_1 (ns)	α_1	τ_2 (ns)	α_2	$\bar{\tau}$ (ns)	$\langle\tau\rangle$ (ns)	χ^2
***o-BMOQBA**							
0	26.71	1.0			26.71	26.71	1.33
5	26.33	1.0			26.33	26.33	1.13
10	26.34	1.0			26.34	26.34	1.21
15	26.19	1.0			26.19	26.19	1.30
25	24.78	1.0			24.78	24.78	1.23
35	0.324	0.0160	25.54	0.9840	25.53	25.14	1.35
45	0.326	0.0184	25.10	0.9816	25.09	24.64	1.46
50	0.455	0.0176	25.20	0.9824	25.19	24.76	1.41
***BMOQ**							
0	27.30	1.0			27.30	27.30	1.08
5	27.04	1.0			27.04	27.04	1.10
10	26.74	1.0			26.74	26.74	1.12
15	26.53	1.0			26.53	26.53	1.06
20	26.25	1.0			26.25	26.25	1.14
30	25.86	1.0			25.86	25.86	1.17
40	25.37	1.0			25.37	25.37	1.05
50	25.00	1.0			25.00	25.00	1.16

* λ_{ex} = 372 nm, emission was collected with a 416 nm cut-off filter. BMOQ $K_{SV} \approx 2$ nM^{-1}.

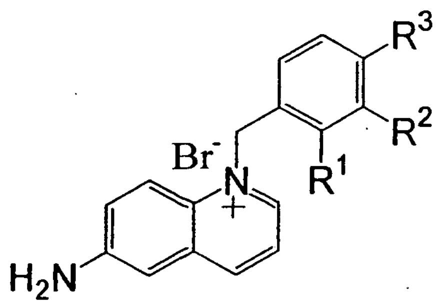
FIGURE 10

Table 3 – Multiexponential Intensity decay of BMQ and *o*-BMQBA

[Cyanide] μM	τ_1 (ns)	α_1	τ_2 (ns)	α_2	$\bar{\tau}$ (ns)	$\langle\tau\rangle$ (ns)	χ^2
***o*-BMQBA**							
0	2.18	0.4646	4.74	0.5354	4.01	3.55	1.00
5	2.14	0.4615	4.45	0.5385	3.78	3.38	1.12
10	2.28	0.5704	4.75	0.4296	3.78	3.34	1.04
15	1.86	0.3265	3.64	0.6735	3.29	3.06	0.97
20	1.88	0.3476	3.69	0.6524	3.30	3.06	1.04
30	1.44	0.1762	3.27	0.8238	3.11	2.95	1.21
40	1.92	0.3511	3.59	0.6489	3.21	3.00	0.90
50	1.87	0.3320	3.58	0.6680	3.22	3.01	1.07
***BMQ**							
0	2.59	1.0			2.59	2.59	1.07
5	2.58	1.0			2.58	2.58	1.09
10	2.59	1.0			2.59	2.59	1.07
15	2.57	1.0			2.57	2.57	1.02
20	2.57	1.0			2.57	2.57	1.12
30	2.55	1.0			2.55	2.55	1.08
40	2.55	1.0			2.55	2.55	1.14
50	2.55	1.0			2.55	2.55	1.17

* λ_{ex} = 372 nm, emission was collected with a 416 nm cut-off filter. BMQ $K_{sv} \approx 0.4$ nM^{-1}.

FIGURE 11



Probe	R^1	R^2	R^3
o-BAQBA	$B(OH)_2$	H	H
m-BAQBA	H	$B(OH)_2$	H
p-BAQBA	H	H	$B(OH)_2$
BAQ	H	H	H

FIGURE 12

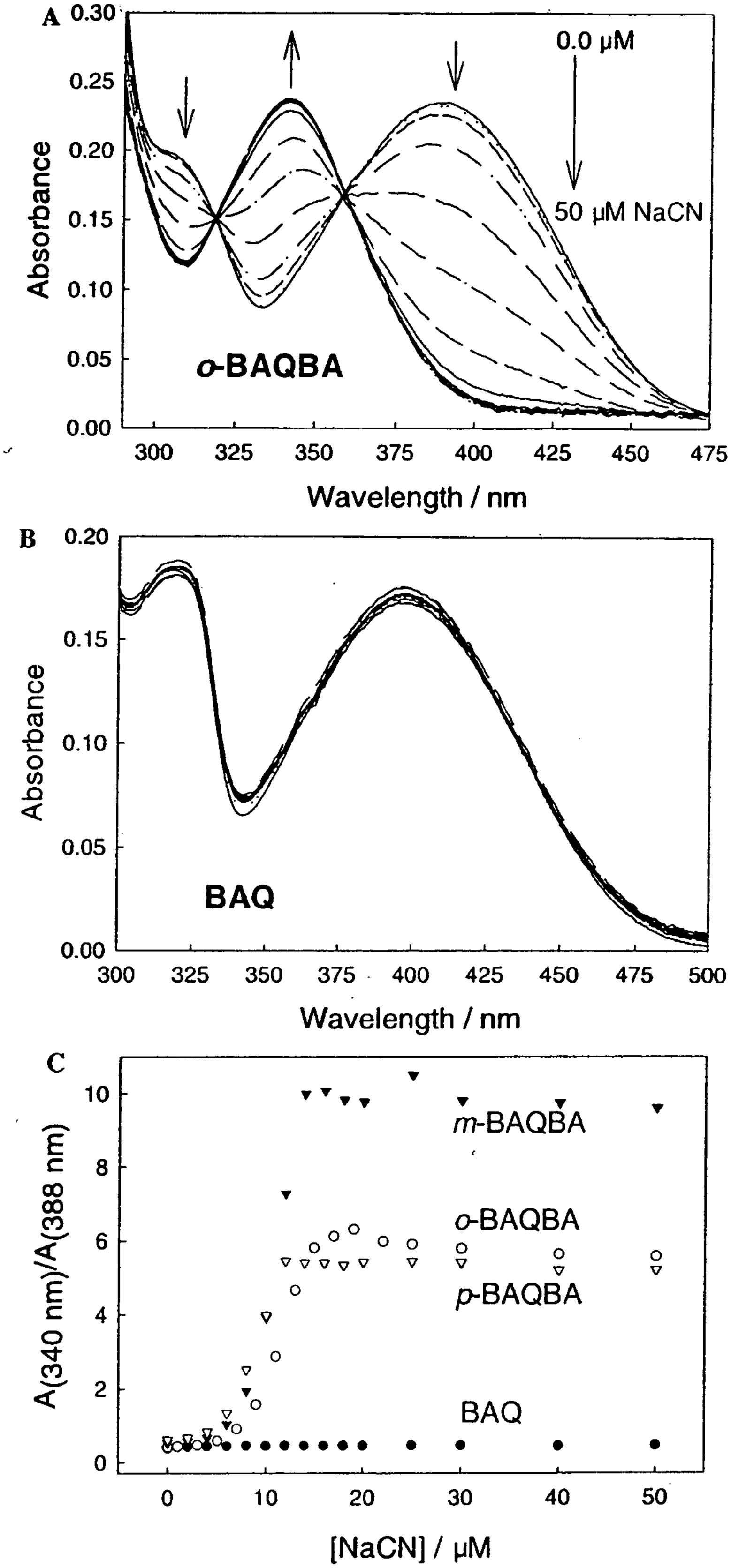
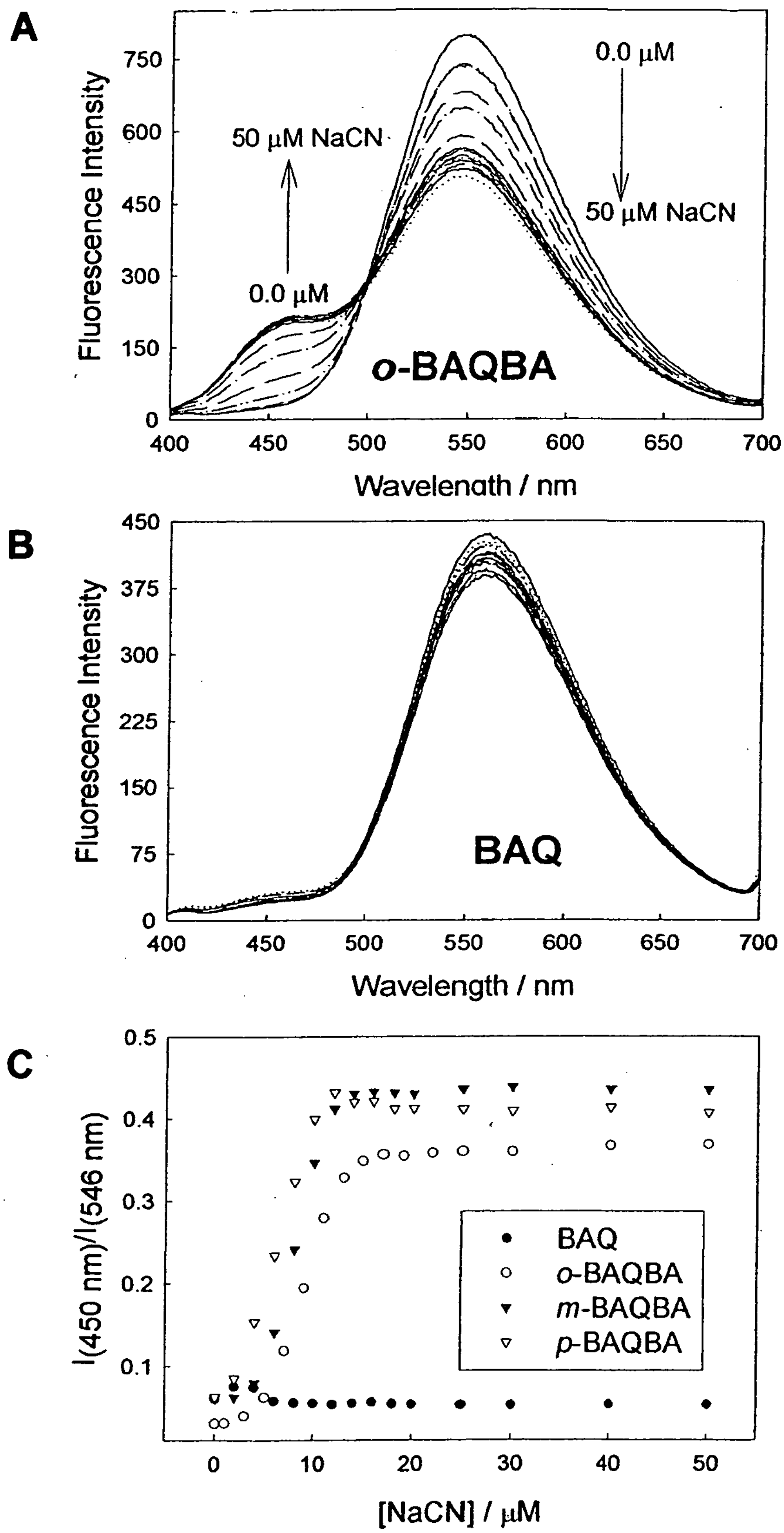

A
Absorbance
0.0 µM
50 µM NaCN
o-BAQBA
Wavelength / nm
B
Absorbance
BAQ
Wavelength / nm
C
A(340 nm)/A(388 nm)
m-BAQBA
o-BAQBA
p-BAQBA
BAQ
[NaCN] / µM

FIGURE 13



A
Fluorescence Intensity
Wavelenath / nm
50 μM NaCN
0.0 μM
0.0 μM
50 μM NaCN
o-BAQBA
B
Fluorescence Intensity
Wavelength / nm
BAQ
C
I(450 nm)/I(546 nm)
[NaCN] / μM
BAQ
o-BAQBA
m-BAQBA
p-BAQBA

FIGURE 14

FIGURE 15

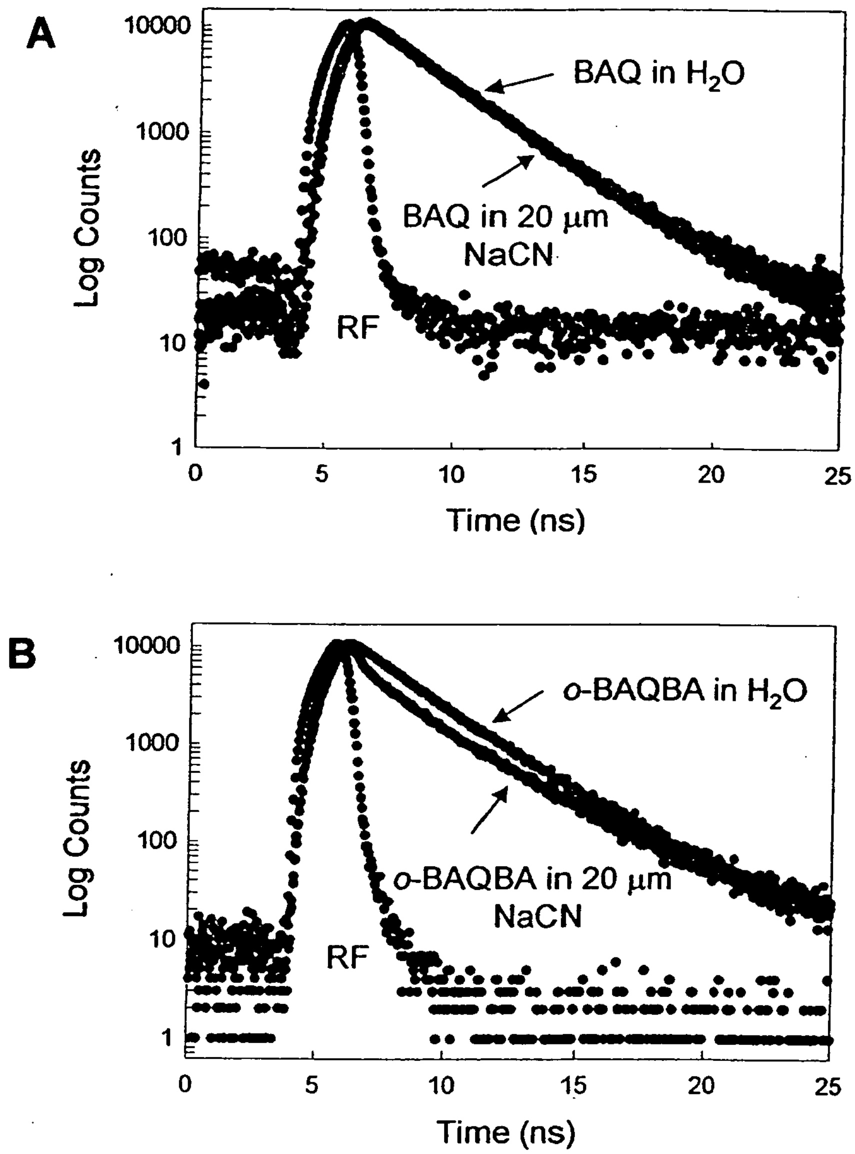

A
10000
1000
100
10
1
Log Counts
BAQ in H_2O
BAQ in 20 μm NaCN
RF
0
5
10
15
20
25
Time (ns)
B
10000
1000
100
10
1
Log Counts
o-BAQBA in H_2O
o-BAQBA in 20 μm NaCN
RF
0
5
10
15
20
25
Time (ns)

FIGURE 16

Table 4: Multiexponential intensity decay of BAQ and *o*-BAQBA

[Cyanide] μM	τ_1 (ns)	α_1	τ_2 (ns)	α_2	τ_3 (ns)	α_3	$\bar{\tau}$	$\langle\tau\rangle$	χ^2
BAQ									
0	2.48	1	-	-	-	-	2.48	2.48	1.10
2	2.48	1	-	-	-	-	2.48	2.48	1.02
4	2.49	1	-	-	-	-	2.49	2.49	1.19
6	2.49	1	-	-	-	-	2.49	2.49	1.32
10	2.49	1	-	-	-	-	2.49	2.49	1.18
16	2.49	1	-	-	-	-	2.49	2.49	1.28
20	2.47	1	-	-	-	-	2.47	2.47	0.89
o-BAQBA									
(380 nm)[a]									
0	2.04	0.71	3.41	0.29	-	-	2.59	2.44	1.06
2	2.02	0.68	3.367	0.32	-	-	2.61	2.45	0.99
4	1.98	0.67	3.37	0.33	-	-	2.61	2.44	0.94
6	1.92	0.62	3.23	0.38	-	-	2.59	2.42	1.06
8[c]	1.55	0.41	2.98	0.59	-	-	2.60	2.39	1.53
10[c]	0.67	0.19	2.64	0.81	-	-	2.53	2.27	2.15
12.5	0.44	0.22	2.60	0.78	-	-	2.50	2.12	2.37
	0.21	0.17	2.07	0.63	3.99	0.20	2.76	2.14	1.08
15	0.38	0.28	2.61	0.72	-	-	2.49	1.98	2.18
	0.21	0.23	1.85	0.44	3.46	0.32	2.71	1.97	1.01
20	0.38	0.30	2.65	0.70	-	-	2.52	1.97	2.47
	0.19	0.24	1.69	0.39	3.36	0.37	2.72	1.95	1.12
(550 nm)[b]									
0	1.99	0.63	3.19	0.37	-	-	2.57	2.43	0.99
2	1.93	0.59	3.15	0.41	-	-	2.58	2.43	0.98
4	2.04	0.70	3.39	0.30	-	-	2.60	2.45	1.07
6	1.87	0.51	2.97	0.49	-	-	2.53	2.41	1.10
8	1.86	0.55	3.14	0.45	-	-	2.60	2.44	1.01
10	1.75	0.48	3.10	0.52	-	-	2.63	2.45	1.17
12.5	1.85	0.61	3.48	0.39	-	-	2.74	2.49	1.03
15	1.32	0.31	2.93	0.69	-	-	2.66	2.43	1.25
20	1.19	0.30	2.97	0.70	-	-	2.71	2.44	0.92

[a]380 nm long-pass filter.
[b]550±10 nm interference filter.
[c]No notable improvement in fit could be obtained using a 3-exponent function. Similar values were also found for the *meta*- and *para*-BAQBA probes.

FIGURE 17

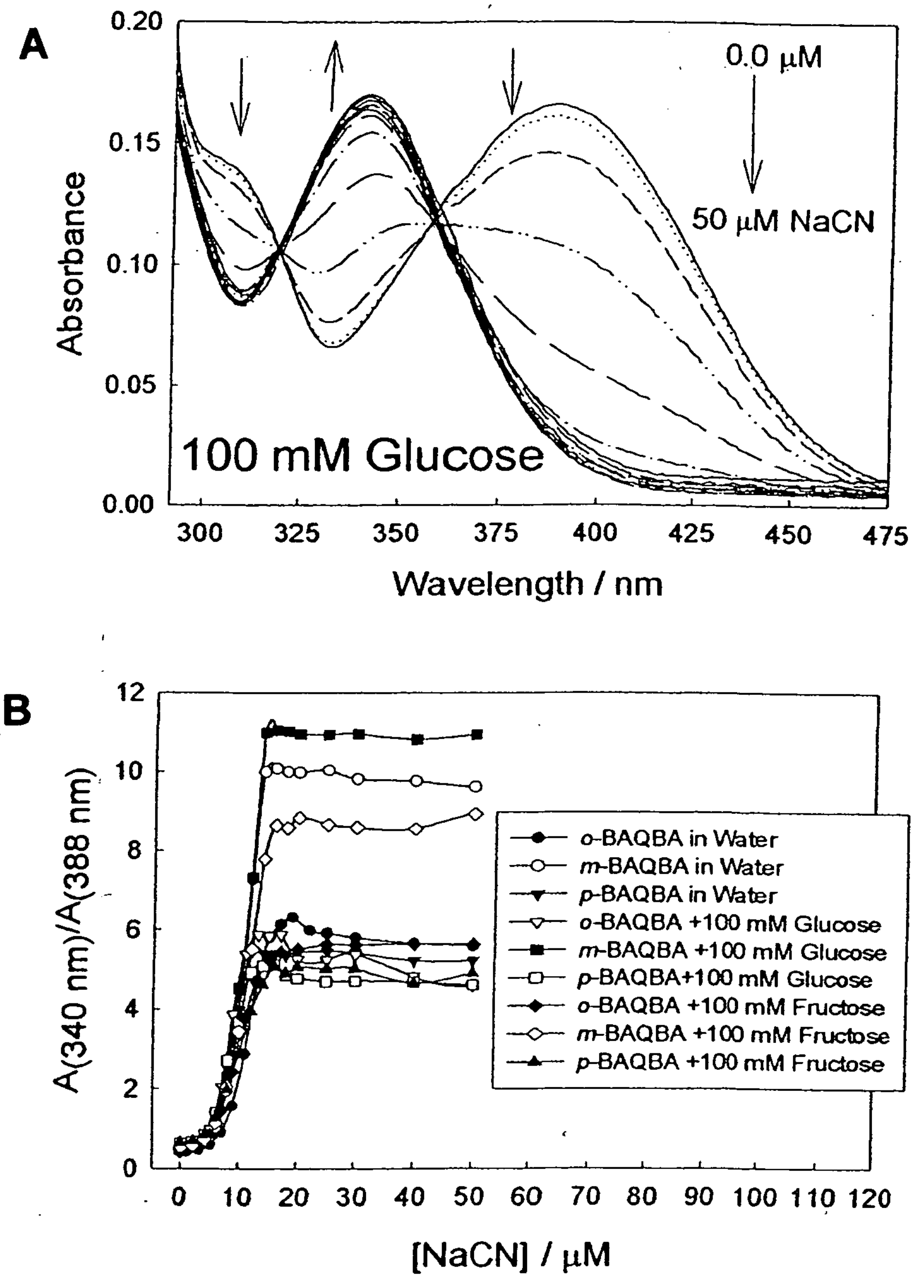

A
0.20
0.15
0.10
0.05
0.00
Absorbance
0.0 μM
50 μM NaCN
100 mM Glucose
300
325
350
375
400
425
450
475
Wavelength / nm
B
12
10
8
6
4
2
0
A(340 nm)/A(388 nm)
o-BAQBA in Water
m-BAQBA in Water
p-BAQBA in Water
o-BAQBA +100 mM Glucose
m-BAQBA +100 mM Glucose
p-BAQBA+100 mM Glucose
o-BAQBA +100 mM Fructose
m-BAQBA +100 mM Fructose
p-BAQBA +100 mM Fructose
0 10 20 30 40 50 60 70 80 90 100 110 120
[NaCN] / μM

FIGURE 18

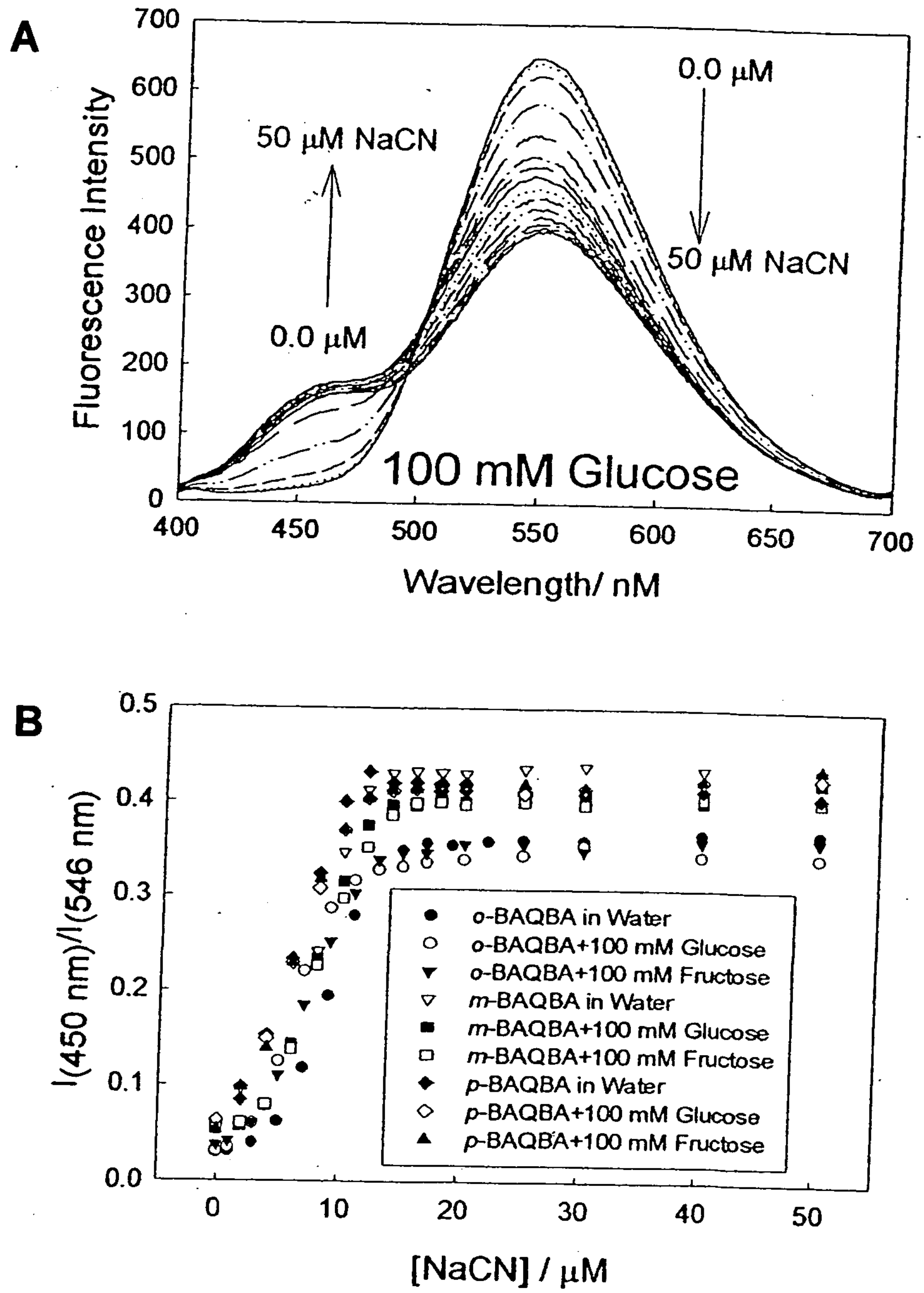
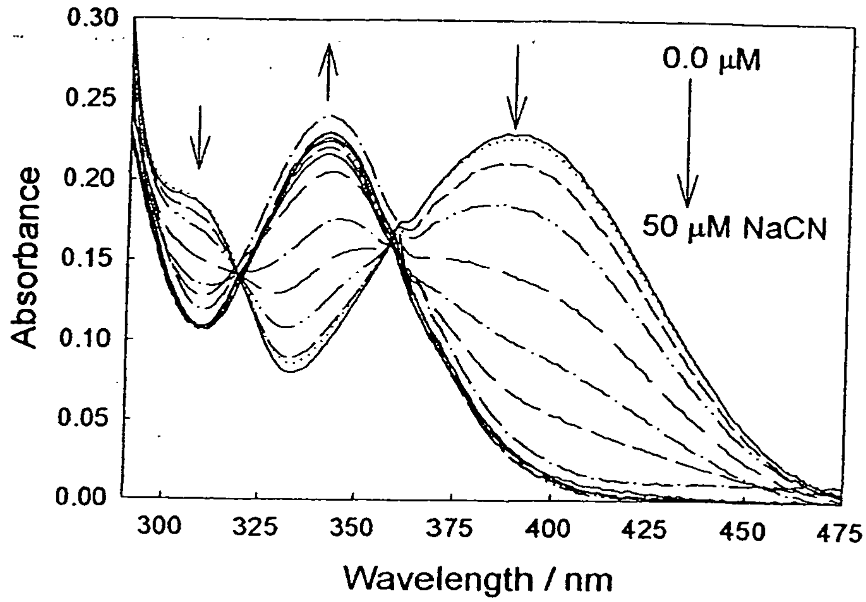

A
Fluorescence Intensity
0
100
200
300
400
500
600
700
50 μM NaCN
0.0 μM
0.0 μM
50 μM NaCN
100 mM Glucose
400
450
500
550
600
650
700
Wavelength/ nM
B
I(450 nm)/I(546 nm)
0.0
0.1
0.2
0.3
0.4
0.5
o-BAQBA in Water
o-BAQBA+100 mM Glucose
o-BAQBA+100 mM Fructose
m-BAQBA in Water
m-BAQBA+100 mM Glucose
m-BAQBA+100 mM Fructose
p-BAQBA in Water
p-BAQBA+100 mM Glucose
p-BAQBA+100 mM Fructose
0
10
20
30
40
50
[NaCN] / μM

FIGURE 19

A


0.0 μM
50 μM NaCN
Absorbance
Wavelength / nm

B

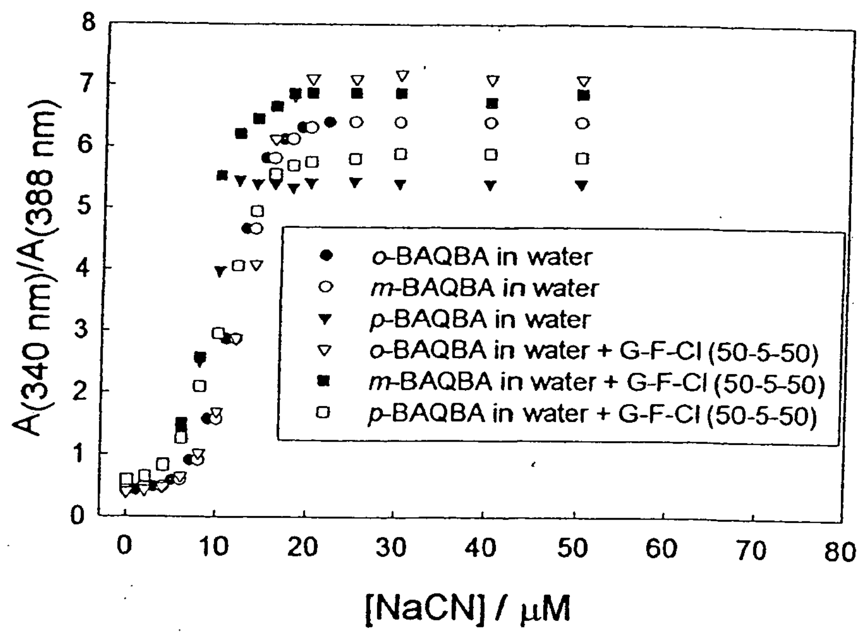
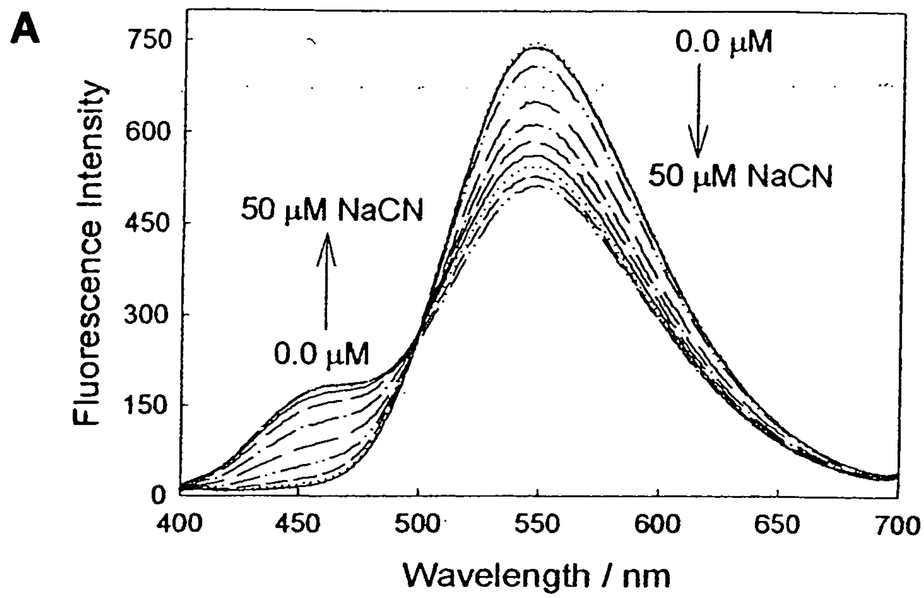

A(340 nm)/A(388 nm)
[NaCN] / μM
o-BAQBA in water
m-BAQBA in water
p-BAQBA in water
o-BAQBA in water + G-F-Cl (50-5-50)
m-BAQBA in water + G-F-Cl (50-5-50)
p-BAQBA in water + G-F-Cl (50-5-50)

FIGURE 20


A
Fluorescence Intensity
750
600
450
300
150
0
400
450
500
550
600
650
700
Wavelength / nm
0.0 μM
50 μM NaCN
50 μM NaCN
0.0 μM

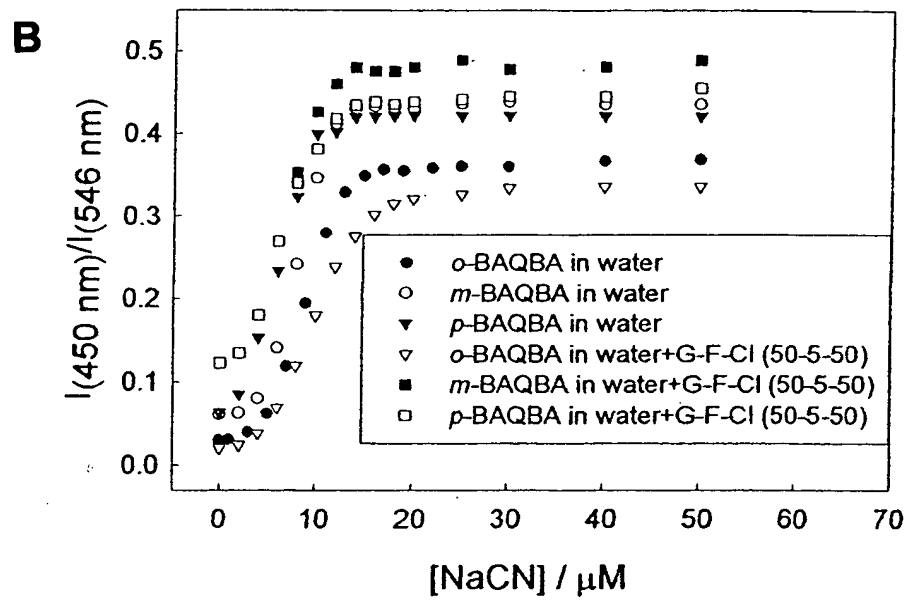
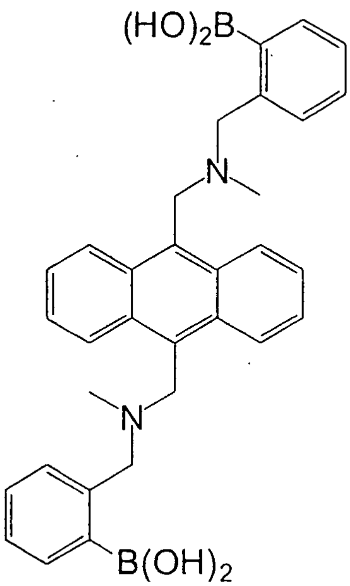
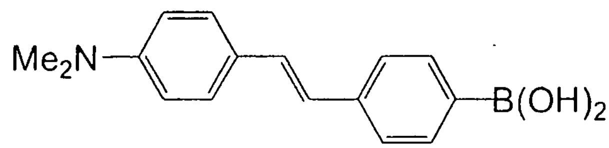

B
I(450 nm)/I(546 nm)
0.5
0.4
0.3
0.2
0.1
0.0
0
10
20
30
40
50
60
70
[NaCN] / μM
o-BAQBA in water
m-BAQBA in water
p-BAQBA in water
o-BAQBA in water+G-F-Cl (50-5-50)
m-BAQBA in water+G-F-Cl (50-5-50)
p-BAQBA in water+G-F-Cl (50-5-50)

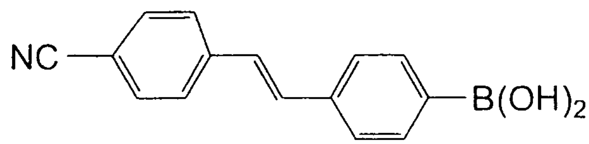
FIGURE 21



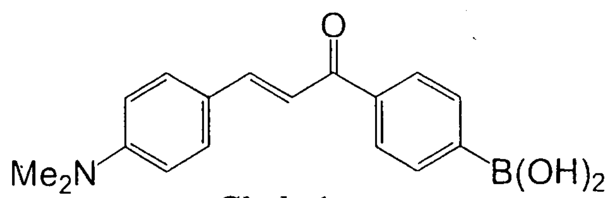
ANDBA



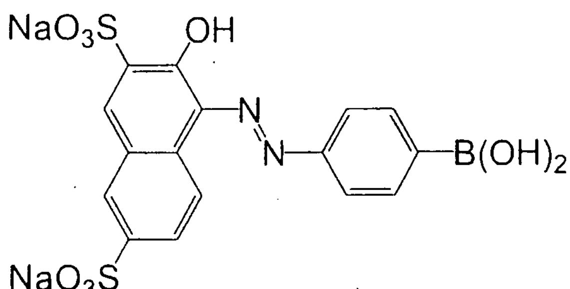
DSTBA



CSTBA

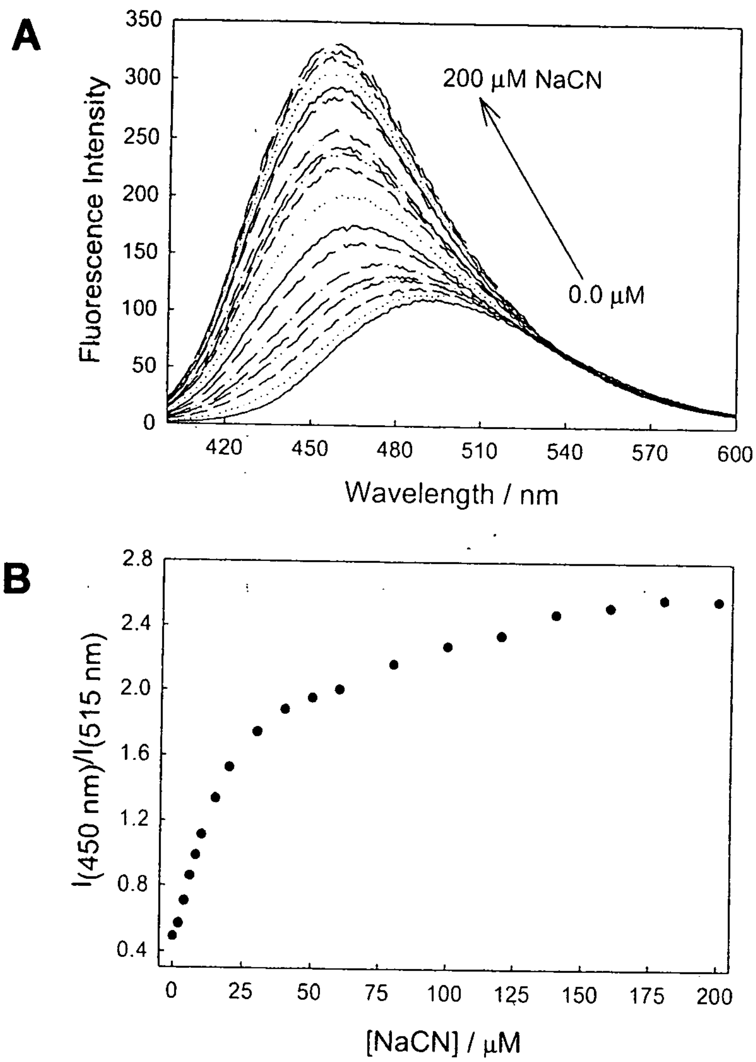


Chalc 1



PANSBA

FIGURE 22



A
350
300
250
200
150
100
50
0
Fluorescence Intensity
200 μM NaCN
0.0 μM
420
450
480
510
540
570
600
Wavelength / nm
B
2.8
2.4
2.0
1.6
1.2
0.8
0.4
I(450 nm)/I(515 nm)
0
25
50
75
100
125
150
175
200
[NaCN] / μM

FIGURE 23

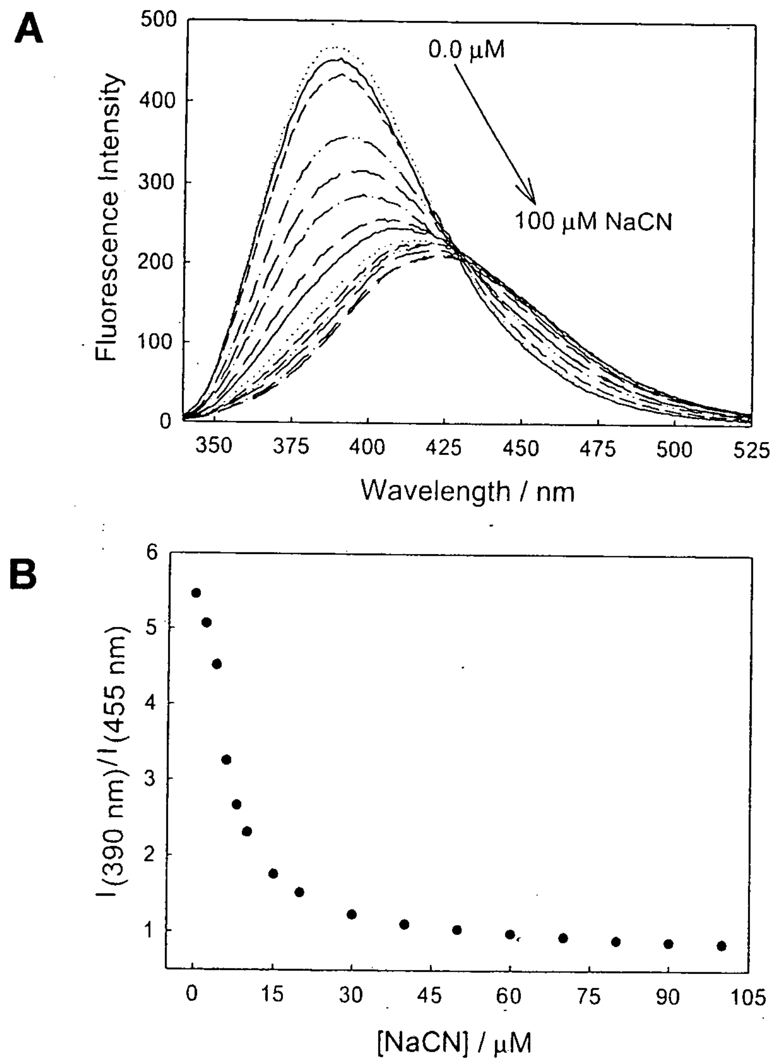

A
0.0 μM
100 μM NaCN
Fluorescence Intensity
Wavelength / nm
B
I(390 nm)/I(455 nm)
[NaCN] / μM

FIGURE 24

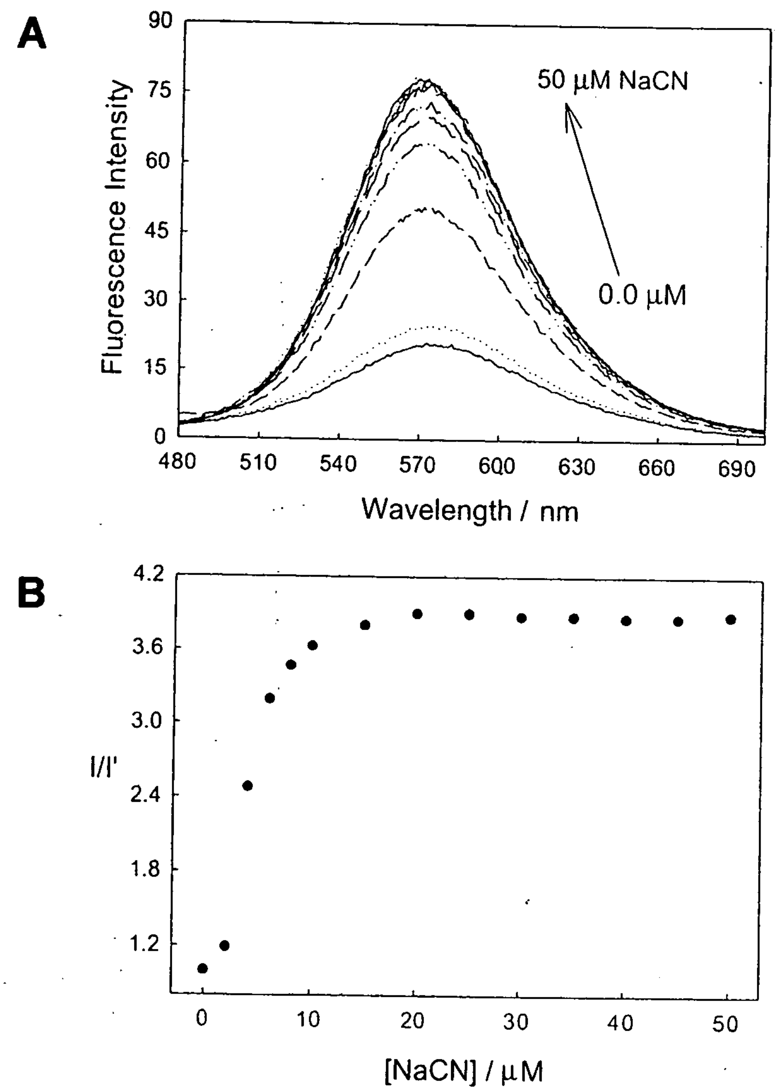

A
Fluorescence Intensity
90
75
60
45
30
15
0
480
510
540
570
600
630
660
690
Wavelength / nm
50 μM NaCN
0.0 μM
B
I/I'
4.2
3.6
3.0
2.4
1.8
1.2
0
10
20
30
40
50
[NaCN] / μM

FIGURE 25

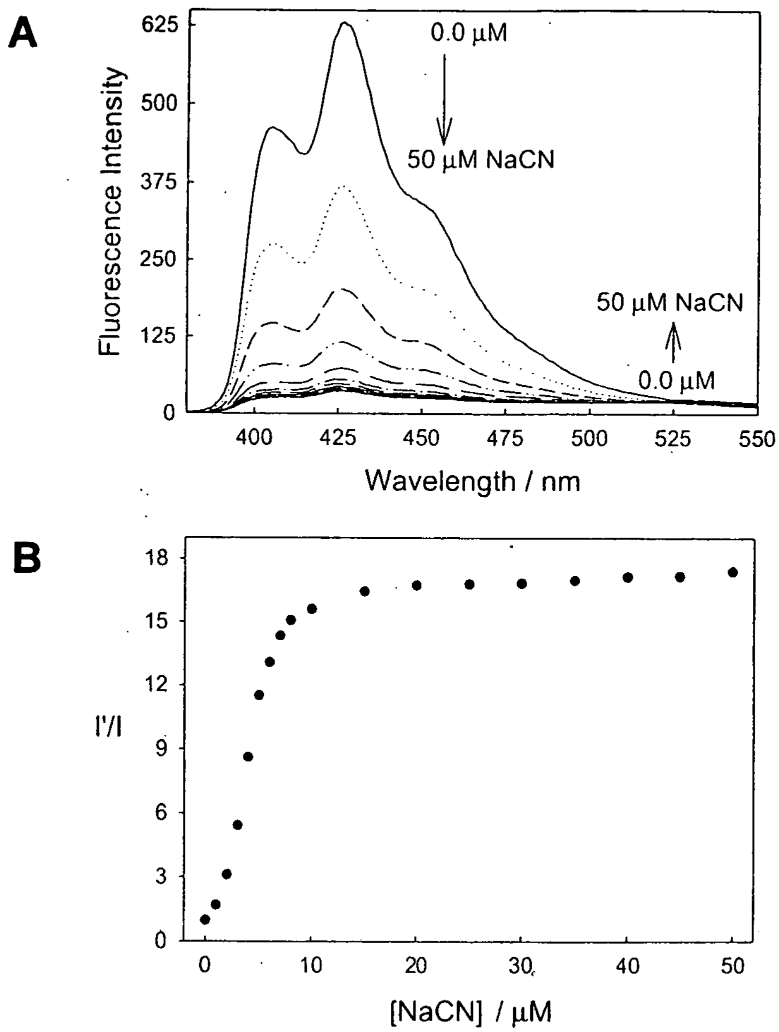

A
625
500
375
250
125
0
Fluorescence Intensity
0.0 μM
50 μM NaCN
50 μM NaCN
0.0 μM
400
425
450
475
500
525
550
Wavelength / nm
B
18
15
12
9
6
3
0
I'/I
0
10
20
30
40
50
[NaCN] / μM

FIGURE 26

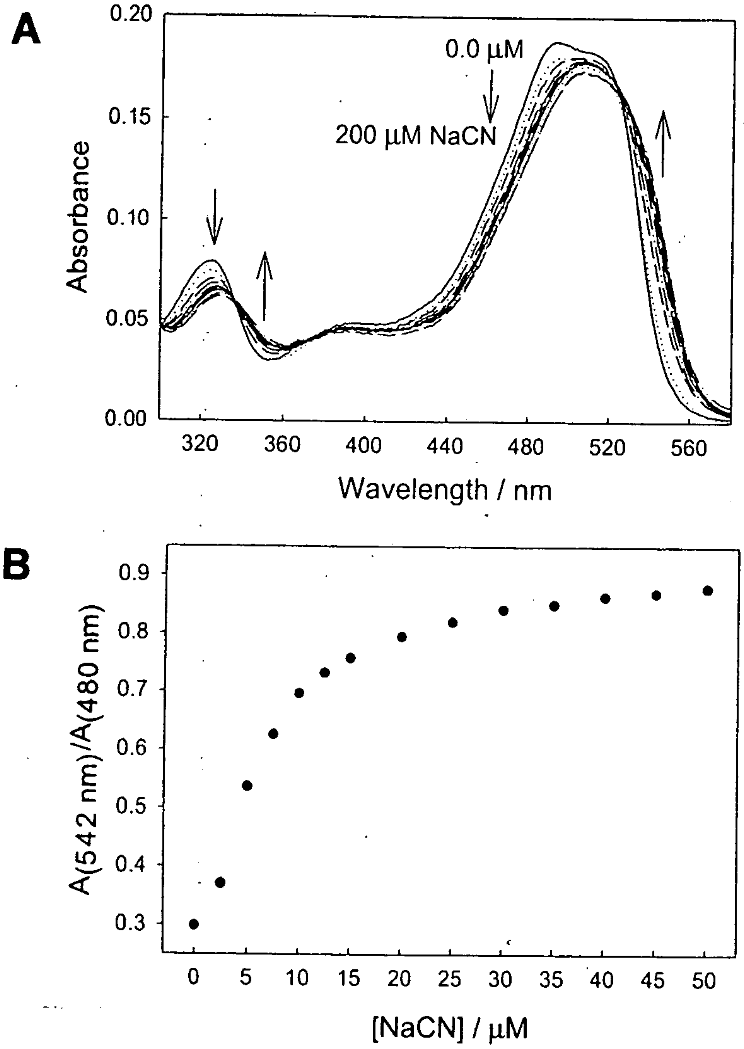

A
0.0 µM
200 µM NaCN
Absorbance
Wavelength / nm
0.20
0.15
0.10
0.05
0.00
320
360
400
440
480
520
560
B
A(542 nm)/A(480 nm)
[NaCN] / µM
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0
5
10
15
20
25
30
35
40
45
50

FIGURE 27

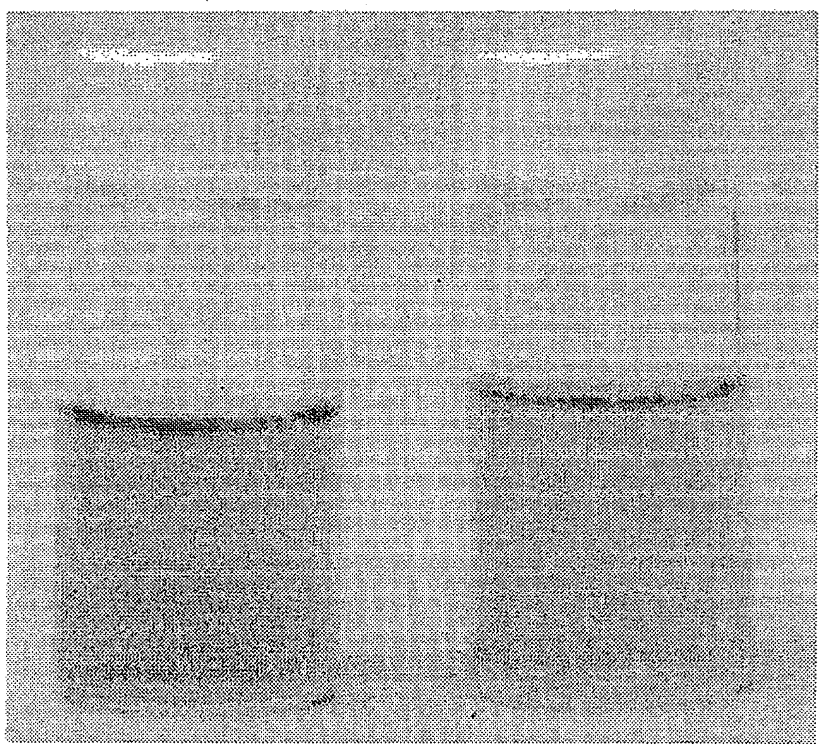


FIGURE 28